MONTANA
POLICY REVIEW

Interoperability Montana: The Building Blocks

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Montana's Communication History

The idea of a connected and compatible statewide Public Safety Land Mobile Radio System (LMR) in Montana has been discussed and studied for over 20 years. Like most states, local, tribal, state and federal responders developed independent Land Mobile Radio (LMR) communication systems to assist responders in protecting lives and property. In most cases, these systems were developed without regard to the operation of neighboring jurisdictions or the needs of multiple agencies.

Currently, the infrastructure of state and local response communities in the state is aged and in need of improvement. Systems are built on a local basis, often with no coordination with other response groups in regional areas. Response organizations may be utilizing incompatible or limiting radio systems with other responders.

The need for LMR 'interoperability' of local, state and federal agencies for significant events is very important. In the past twenty years prior to the Interoperability Montana Project, two significant attempts were made at providing the responders in Montana with interoperable communication assets. Following the conversion of many response agencies to the very high frequency (VHF) band in the 1970's and 1980's, the State of Montana, along with fire, law enforcement and EMS response organizations, developed the State of Montana Mutual Aid and Common Frequency Plan in 1990. This plan established fourteen (14) Mutual Aid frequencies and five Common Frequencies (all known as the 'Color' Channels) for use during interagency operations. Also identified are the Montana Mutual Aid Repeater Frequencies and National General Use Interoperability Narrowband Frequencies.

The plan outlines the use, rights and responsibilities of each response agency to use the spectrum and what state and Federal Communication Commission rules must be followed. The plan also defines the suggested operational use of each frequency during mutual aid responses and presents formats for Incident Communication Plans, and discusses the importance of the Incident Command System in response operations. Currently, most local, tribal, state and federal agencies in Montana have limited interoperability capability utilizing the statewide mutual aid frequencies operating in simplex mode. For normal, localized incidents, this works well but falls short of interoperable communication needs for large-scale incidents and disasters.

A second attempt at defining and developing a Montana-wide LMR communication system occurred in the mid to late 1990's. Two studies were completed that identified state and local resources, reviewed needs and developed draft proposals for building a connected, Montana-wide system. However, due to limited funding and the inability to come to agreement on governance and sustainability issues, the proposal never took root.

The terrorist attack of September 11, 2001, became a catalyst for developing comprehensive, interoperable communication systems. During this and subsequent natural disasters, the shortfall of clear, reliable, and interconnected communications was demonstrated with tragic results. Following these lessons learned, Montana local and state agencies, along with regional groups, began to evaluate ways of improving communication and response effectiveness. Working up from the grassroots level, local emergency responder agencies responded with mutual cooperation, including using a variation of the old-fashioned "barter system" to combine resources to their mutual benefit.

New Beginnings

Following 9/11 at the request of the Department of Homeland Security, the Governor created the Montana State Interoperability Executive Council (SIEC). The purpose of the SIEC is to create policy level advocacy for interoperability with regard to public safety communication in Montana. Two projects were designated as Concept Demonstration Projects (CDP) by the State Interoperable Executive Council (SIEC). CDP#1 – Lewis and Clark County, demonstrated the digital/trunking technology with a deployed, county wide system involving all responders with a public safety radio. CDP#2 – the Northern Tier Interoperable Project, developed a strategy to build upon the Lewis and Clark County concept to a regional network, linking all law enforcement, fire and EMS agencies along the Canadian border with the Lewis and Clark system. This formed the foundation of future statewide planning.

The foundation for the Lewis and Clark County project began even prior to 9/11. In 1999, the Lewis and Clark County Sheriff's Office budget showed a deficit of $500,000 in funds needed just to maintain regular operations. The county formed a citizens advisory group, which brought to light several problems, including a failing communications system. The advisory group recommended a ballot measure for an ongoing mill levy, part of which would be earmarked for communications ($125,000 annually).

That ongoing levy led to other forms of assistance, including a FEMA grant in 2002 and endorsement by the governor in the same year as a concept demonstration project. Additional grant funding allowed the project to purchase radios for not only the sheriff's department, but also for fire services, public works, the health department, and various state agency offices. The consortia members learned about working with vendors and came up with a concept for a hybrid system using both VHF and digital radios. Repeater towers were built, and agreements were reached to share existing sites with other agencies.

The Lewis and Clark system began operations during November 2005. Prior to the system becoming operational, the second Concept Demonstration Project, the Northern Tier Interoperability Consortia (NTIC) was formed. The NTIC was born following a meeting of law enforcement agencies in Havre in 2002, when Senator Max Baucus asked what could be done to improve law enforcement operations along the Canadian Border. The overwhelming response was to improve interoperable communications.

The Northern Tier was formally organized in 2004 and seed money in the form of Homeland Security and 2005 State of Montana legislative funds created an initial pool of over $10 million dollars. Shortly after the NTIC began operating, the Board voted to adopt the Lewis and Clark County technical approach and build off the system developed in Helena. This formed the backbone of what is to become the Montana-wide effort known as Interoperability Montana.

The Importance of Definitions and Standards

To develop optimum interoperability, LMR systems must be developed on a standards based shared system, allowing continuity for the entire local, state and federal response community. A standard, compatible mechanism must be deployed linking agencies and consortiums around the state.

Initial efforts to establish the standards based system began through the State Interoperable Executive Council (SIEC). The Statewide Interoperability Executive Council is comprised of local, state, federal, and other public service agency representatives. Its purpose is to provide policy level direction for matters related to planning, designing and implementing guidelines, best practices, and standard approaches to solve Montana's public safety communications interoperability problems and to leverage any opportunity in support of a statewide system, including seeking federal funding, or other funding, for statewide interoperability. Sharing of a common radio infrastructure will eliminate duplications of capital investment projects reducing total radio communications cost for each participating agency.

After the initiation of Lewis and Clark County and the Northern Tier projects, other regional and local projects began to form. This led to the creation of eight voice and one mobile data consortium. Because of the need to consolidate and coordinate these efforts, the Montana SIEC adopted a 'Definition of Interoperability'. This definition allows a common platform to build interoperability communications throughout the State of Montana. The definition adopted by the SIEC includes the following:

SIEC Definition Statement (Public Safety Land Mobile Radio):

Definition Statement:

Interoperability refers to the ability of public safety emergency responders to work seamlessly with other systems or products without any special effort. Wireless communications interoperability specifically refers to the ability of public safety officials to share information via voice and data signals on demand, in real time and when needed.

In addition to the definition of interoperability, the SIEC adopted technical standards for interoperability projects in Montana. They include:

Technical Requirements:

The technology needed to meet the Interoperability Definition is that public safety radio communications in Montana will be a standards-based shared system of systems. The radio system will be a wide area system for use by public safety responders.

Through the deployment of a migration plan that identifies the steps and process for each participating agency, the system will combine P25 trunked and P25 digital / analog conventional technologies to provide interoperable communications among P25 narrowband digital trunked and existing conventional users. All equipment must be compatible and seamlessly integrate with infrastructure equipment deployed in CDP 1 - Southwest Interoperability Project and CDP2 - Northern Tier Interoperability Project. It will operate narrowband in the VHF frequency range and will use a protected high-capacity digital microwave backbone for voice and data interconnect traffic.

The system will provide advanced channel management for the shared use of frequencies, seamless roaming throughout the respective trunked areas (footprint) and enhanced responder safety through embedded signaling, while at the same time enhancing interoperable communication with existing legacy VHF radios. At a lower level of interoperability, the current mutual aid channels will be maintained and available for use.

While all agencies recognize the optimum goal of a trunked system, they will need to

migrate to trunking in a step/phased approach. With this ultimate goal, however, all agencies will purchase equipment that is trunking capable or upgradeable to trunking. Progression through these steps will vary in a given time based on operational needs, and ultimately funding available.

This approach will allow public safety responders in Montana to exchange voice and data communications on demand, in real time during emergencies and disasters.

Birth of the Interoperability Montana Project

In 2005, directors from the eight voice and one mobile data consortia came together to form the Interoperability Montana Project Directors Board (IMPD). The IMPD, along with its designated Technical Committee, provides direction and priority for development of the connected, statewide system. At this level, and to a lesser degree the consortia level, state and federal partners participate with planning and implementation steps. Some agencies, such as the Montana Highway Patrol, Montana Fish, Wildlife and Parks, and the Montana Department of Corrections, are planning to utilize the system as it is established. Currently, the State of Montana Department of Transportation, Highway Patrol, and Department of Natural Resources and Conservation are voting members along with the nine regional local representatives. Federal agencies such as BLM, Glacier National Park, FBI and BIA contribute assets and expertise in the process, including active assistance with planning and implementation steps. Many Federal agencies intend to use the system as a way to improve their communication capability and interoperability with local, state and tribal response organizations. Because of the mutual interest in seeing an interoperable communication system developed in Montana and the desire to establish a formal relationship to see this happen, a Memorandum of Understanding was developed between the State of Montana and DOI. The IMPD has hired r (Northrop Grumman Corporation as a centralized Project Manager to ensure consistency with planning and project implementation.

This grass-roots organizational structure has resulted in positive outcomes in the organization and implementation of interoperable communications in Montana, with the vision of having a fully functional state-wide system with active local, federal, state and tribal users. Great progress has been seen, primarily due to the leadership from the local level. Because of the unique nature of this project and its organization, several key planning steps involving policies, standard operating procedures, and governance have not been completed or initiated.

The Interoperability Montana project is a comprehensive public safety communication project led by local agencies in Montana. The purpose is to develop a connected system based on the P25 national standard, thus improving communication capability and interoperability among law enforcement, fire, and EMS agencies on a local, tribal, state and federal level. Following IM Project organization in 2005, the Board of Project Directors adopted the definition of interoperability and technical requirements as established by the SIEC.

The Interoperability Montana Project Directors (IMPD) have the authority to evaluate and set priorities for interoperability projects in Montana. Recommendations for funding and system design are provided to the IMPD by the Interoperability Montana Technical Committee (IMTC). The IMTC evaluates sites and projects on technical and feasibility criteria, and recommends funding to the IMPD. In addition, important subcommittees such as the Frequency Subcommittee, Encryption Subcommittee and Governance Committee establish guidance and use of important resources within IM.

Consistency with SAFECOM Guidance

In addition to the requirements of the Montana Definition of Interoperability and Technical requirements, the Interoperability Montana project has adopted the SAFECOM interoperability guidance. This resource provides a simple and common methodology of evaluating the effectiveness of interoperable communication processes in five key areas:

Governance
Standard Operating Procedures
Technology
Training and Exercises
Usage

It is the goal of the Interoperability Montana Project to move toward the optimal level of interoperability in each of these target areas, represented by the far right side of the chart found below. Through the grass root coordination of the IM project and adoption of standard technologies, this goal will become reality in the future.

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